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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/673,325

09/30/2003

Chi-Shen Lee

LEEC3076/EM

2248

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7590

03/22/2005

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EXAMINER

GEYER, SCOTT B

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/673,325

Applicant(s)

LEE ET AL.

Examiner

Scott B. Geyer

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 1-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because of minor informalities as follows:

For figure 1J, change "Fogure" to - - Figure - -.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

Figure 1A: reference numeral "125"

Figure 1B: reference numerals "116" and "105"

Figure 1C: reference numerals "116" and "105"

Figure 1D: reference numerals "10", "20", "30", "105", "116", "206", "216" and "226"

Figure 1E: reference numerals "10", "20", "30", "105", "116", "206", "216" and "226"

Figure 1F: reference numerals "105", "116", "206", "216" and "226"

Figure 1G: reference numerals "10", "20", "30", "105", "116", "206", "216", "226" and "406"

Figure 1H: reference numerals "10", "20", "30", "105", "116", "206", "216", "226" and "406"

Figure 1I: reference numerals "105", "116", "206", "216", "226" and "406"

Figure 1J: reference numerals "10", "20", "30", "105", "116", "206", "216" and "406"

Figure 1K: reference numerals "105", "116", "206" and "216"

Figure 1L: reference numerals "105", "116", "206" and "216"

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

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amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. **Examples** of some unclear, inexact or verbose terms used in the specification are:

Page 1, lines 10-12: confusing language

Page 2, line 16: "A-Si" is used to designate amorphous silicon. Conventional designation of amorphous silicon is - - α -Si - - .

Page 3, line 6: drawing figures 1A-1L referred to as "Graphs A-Z of figure 1"

Page 3, line 13: change "please referring" to - - please refer - - (occurs on subsequent pages as well, for the other drawing figures)

Page 5, line 1: define acronyms "ITO" and "IZO"

Page 5, line 10: change "497" to - - 407 - -

Page 6, line 3: change "Figure I" to - - Figure 1I - -

Page 7, lines 19-23: superfluous and unnecessary language – this section should be deleted

Abstract – also has grammatical errors – should be re-written for clarity and conciseness.

Applicant is advised to check the entire specification and abstract and correct all errors related to clarity, grammar and style, and avoid adding new matter. The above list is not a complete list of the objections to the specification.

Claim Objections

5. Claims 1, -10 are objected to because of the following informalities:

For claims 1-10: “thin film transistor TFT” is redundant, since “TFT” is the art-accepted acronym for thin film transistor. The applicant is advised to amend the claims to use one or the other, especially since the acronym is already defined by the specification on page 1.

For claims 1 and 2: change “A-Si” to - - α -Si - - (see also specification objection above).

For claim 1, lines 9-10: change “dielectric covers on the up side of the gate electrode” to - - dielectric covers the top side of the gate electrode - - (other changes could also be acceptable, so long as the grammar is fixed)

For claim 1: a second mask, a third mask and a fourth mask are recited, but no first mask is recited. Either a first mask should be referenced, or the titles of the three

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recited masks should be changed to "first", "second" and "third", rather than "second", "third" and "fourth" (see also 112 2nd paragraph rejection below).

For claim 1, lines 19-20: the claim limitations as recited in these two lines is confusing (see also 112 2nd paragraph rejection below).

For claim 2: change "Si" to - - α -Si - -

For claim 3: put acronyms "PVD", "LPCVD" and "PECVD" in parentheses.

For claim 4, lines 2-3: "the process of the defining gate electrode used the deposition methods to define" should be rewritten for clarity.

For claim 4, line 4: change "depositing" to - - deposited - -.

For claim 4, line 5: clarify limitation; change "Cu, Al, Ag" to - - Cu, Al or Ag - - OR - - Cu, Al, and Ag - - (see claim 9, line 3 for example).

For claim 6: put acronyms "LPCVD" and "PECVD" in parentheses.

For claim 8, lines 2-5: "the process of the defining...has to implement the replacement": rewrite for clarity.

For claim 10: change "fourth" to - - third - - *if change to claim 1 is made (see above objection of claim 1)*

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to **claim 1**: claim 1 recites a second, third and fourth mask, without reciting a first mask. Since only three masks are recited, it is to be interpreted by the examiner of purposes of examining, that the three masks are first, second and third masks, and that claim 1 as currently written does not recite 4 masks, but instead recites 3 masks. Claims 2-10 are also rejected, since they are dependent upon claim 1 and necessarily contain all the limitations of claim 1.

Furthermore, **claim 1** recites the limitations "the second mask", "the third mask" and "the fourth mask". There is insufficient antecedent basis for this limitation in the claim.

Also, **claim 1** recites the limitations "the gate electrode" in line 3, "the replacement method" in line 3, "the first wiring" in line 4, "the dielectric layer" in line 6, "the A-Si layer" in line 6, "the contact window" in line 10, "the transparent conducting layer" in line 12 and "the source and the drain electrodes" in line 14. There is insufficient antecedent basis for these limitations in the claim.

Also for **claim 1**, line 10 recites a single 'contact window' and then line 11 recites "multiple contact windows", which is a contradiction of limitations, rendering the claim unclear.

For **claim 2**: claim 2 recites the limitation "the low-resistance metal" in line 3 and "the first conducting metal" in lines 6-7. There is insufficient antecedent basis for these limitations in the claim.

For **claim 3**: claim 3 recites the limitation "the conducting metal" in lines 3-4. There is insufficient antecedent basis for the limitation in the claim.

For **claim 4**: claim 4 recites the limitation "the conducting metal" in lines 3-4. There is insufficient antecedent basis for the limitation in the claim.

For **claim 5**: claim 5 recites the limitation "the continuous deposition method" in line 3. There is insufficient antecedent basis for the limitation in the claim.

For **claim 7**: ITO and IZO are not defined (nor are they defined within the specification), rendering the claim unclear and indefinite.

For **claim 8**: claim 8 recites the limitation "the partial N+ Si layer" in line 5. There is insufficient antecedent basis for the limitation in the claim.

For **claim 9**: claim 9 recites "the second conducting metal" in line 2. There is insufficient antecedent basis for the limitation in the claim.

For **claim 10**: claim 10 recites "the photo-resist" in line 3. There is insufficient antecedent basis for the limitation in the claim.

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8. Although claims 1-10 are rejected under 35 USC 112, second paragraph above, they would be otherwise allowable, provided the applicant properly amends the claims to overcome the rejections and objections noted above. Further, Since the specification (and abstract) are replete with grammatical, style and clarity issues, the

specification and abstract also need to be properly amended, since the claims as amended must find support within the specification.

The following is a statement of reasons for the indication of allowable subject matter, based upon the examiner's interpretation of the claims:

The prior art of record and to the examiner's knowledge does not teach or render obvious, at least to the skilled artisan, the instant invention regarding a method of forming a thin film transistor, particularly characterized by using an amorphous silicon layer as a seed layer, combined with deposition of a wiring layer and using first, second and third masks to define contact windows, source/drain regions and etching a passivation layer respectively.

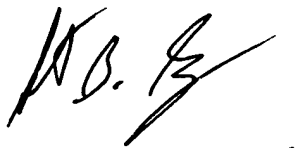
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott B. Geyer whose telephone number is (571) 272-1958. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Scott B. Geyer
Patent Examiner, 2812
March 16, 2005


3/16/05